FIG. 1

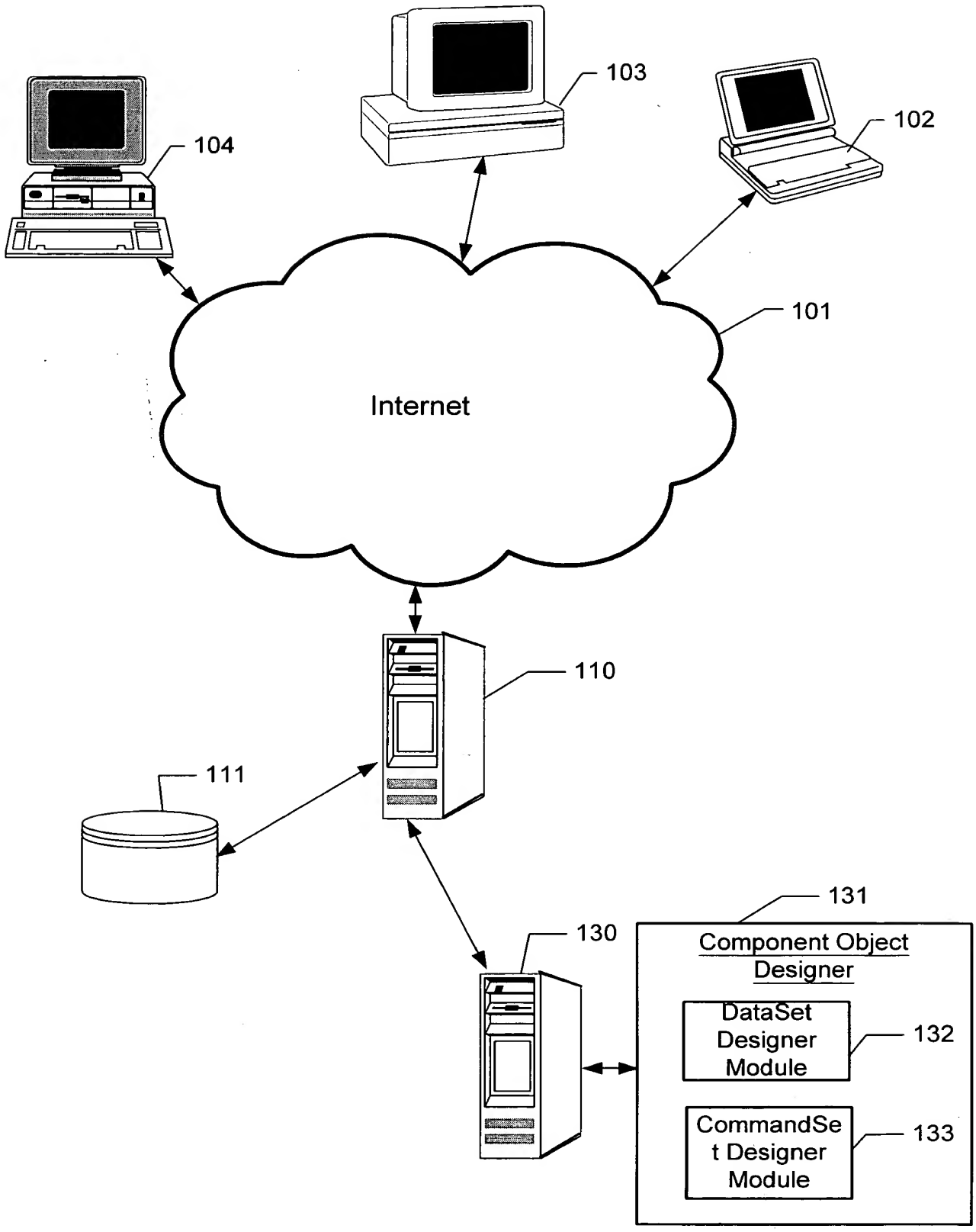

103
102
104
101
Internet
110
111
131
130
Component Object Designer
DataSet Designer Module
132
CommandSet Designer Module
133

FIG. 2

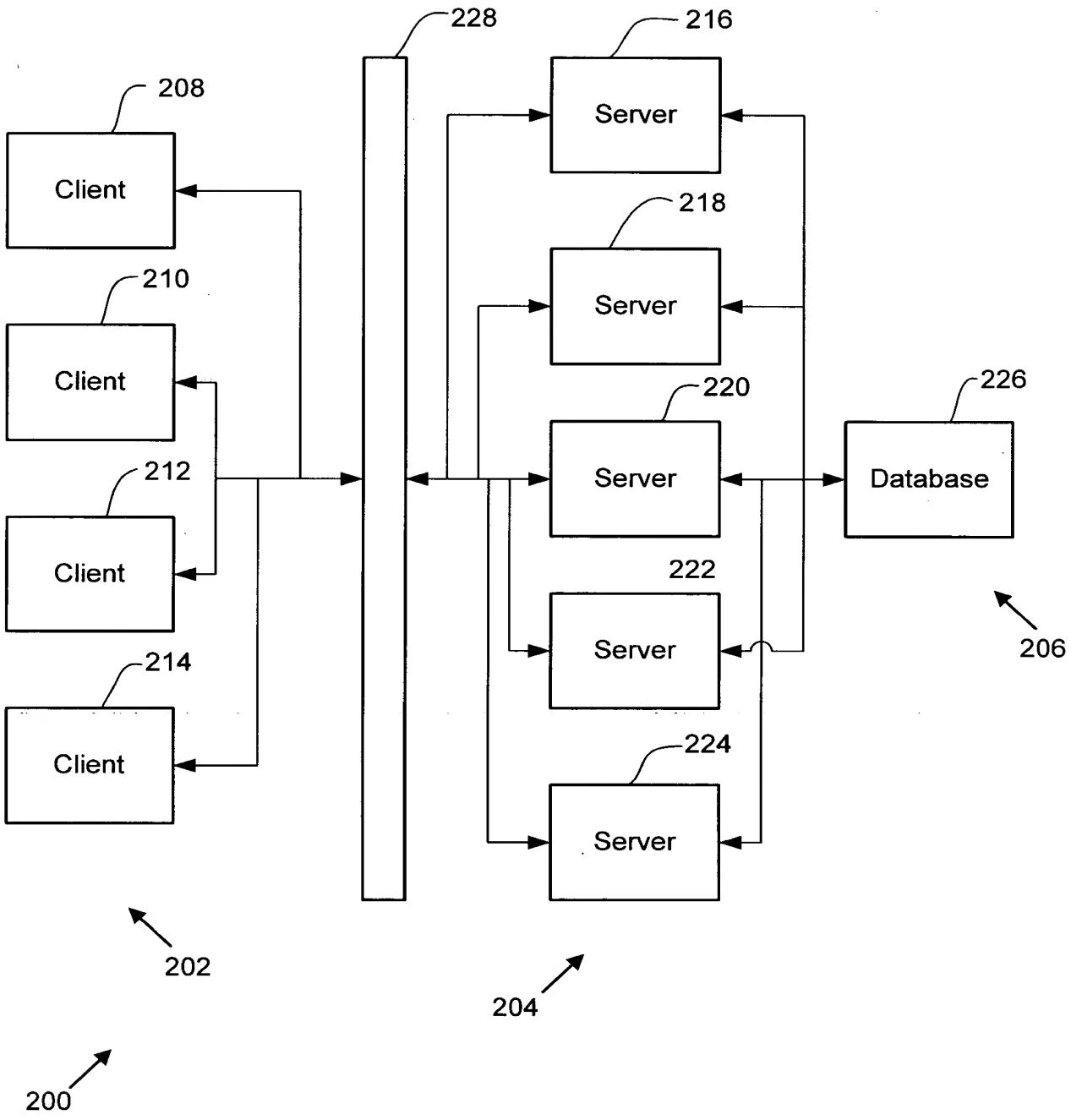

228
216
208
Server
Client
218
210
Server
Client
220
226
212
Server
Database
Client
222
Server
206
214
Client
224
Server
202
204
200

FIG. 3

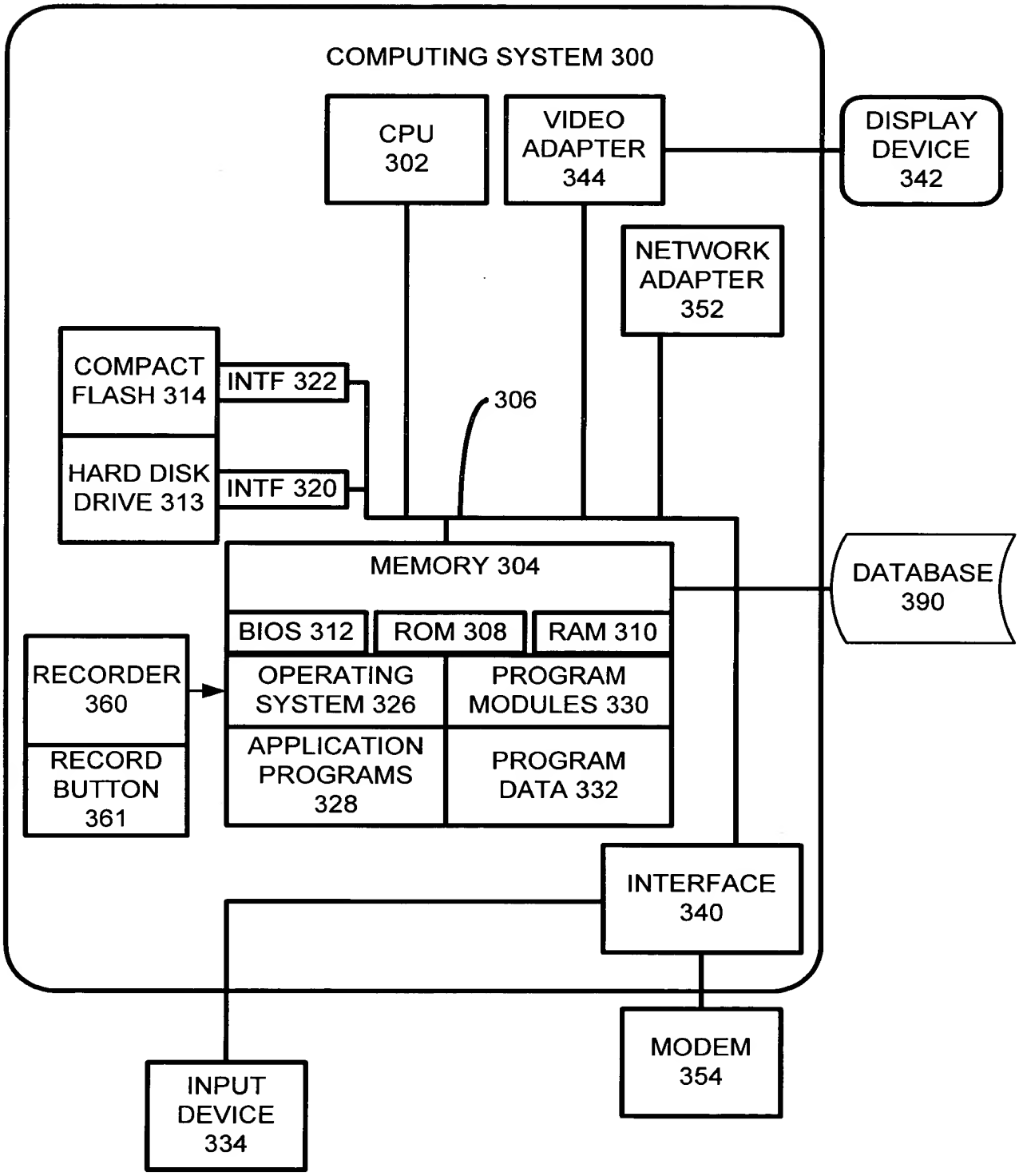

COMPUTING SYSTEM 300
CPU 302
VIDEO ADAPTER 344
DISPLAY DEVICE 342
NETWORK ADAPTER 352
COMPACT FLASH 314
INTF 322
306
HARD DISK DRIVE 313
INTF 320
MEMORY 304
DATABASE 390
BIOS 312
ROM 308
RAM 310
RECORDER 360
OPERATING SYSTEM 326
PROGRAM MODULES 330
RECORD BUTTON 361
APPLICATION PROGRAMS 328
PROGRAM DATA 332
INTERFACE 340
MODEM 354
INPUT DEVICE 334

FIG. 4

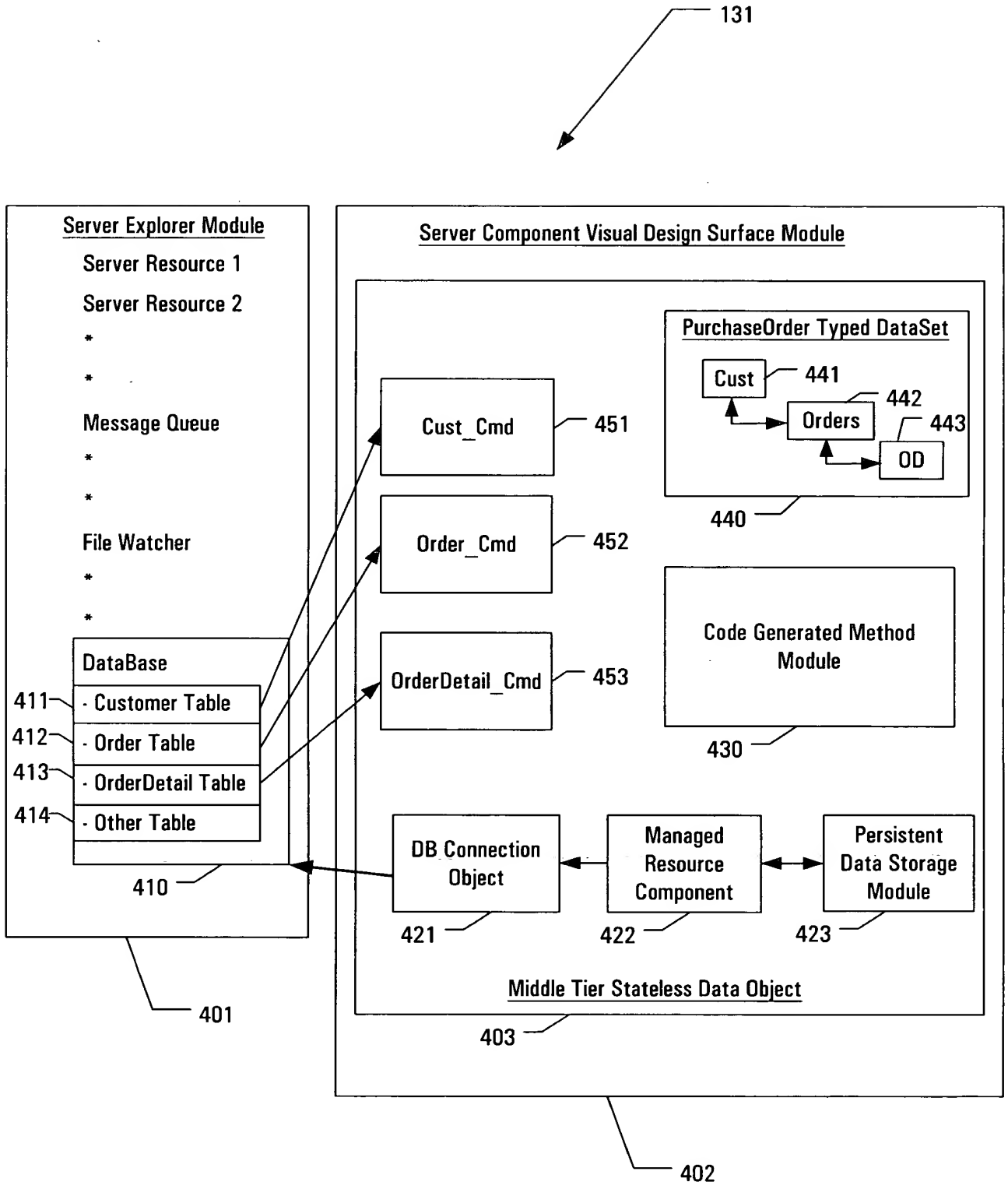

131
Server Explorer Module
Server Resource 1
Server Resource 2
*
*
Message Queue
*
*
File Watcher
*
*
DataBase
411
- Customer Table
412
- Order Table
413
- OrderDetail Table
414
- Other Table
410
401
Server Component Visual Design Surface Module
PurchaseOrder Typed DataSet
Cust
441
Orders
442
OD
443
440
Cust_Cmd
451
Order_Cmd
452
OrderDetail_Cmd
453
Code Generated Method Module
430
DB Connection Object
421
Managed Resource Component
422
Persistent Data Storage Module
423
Middle Tier Stateless Data Object
403
402

FIG. 5

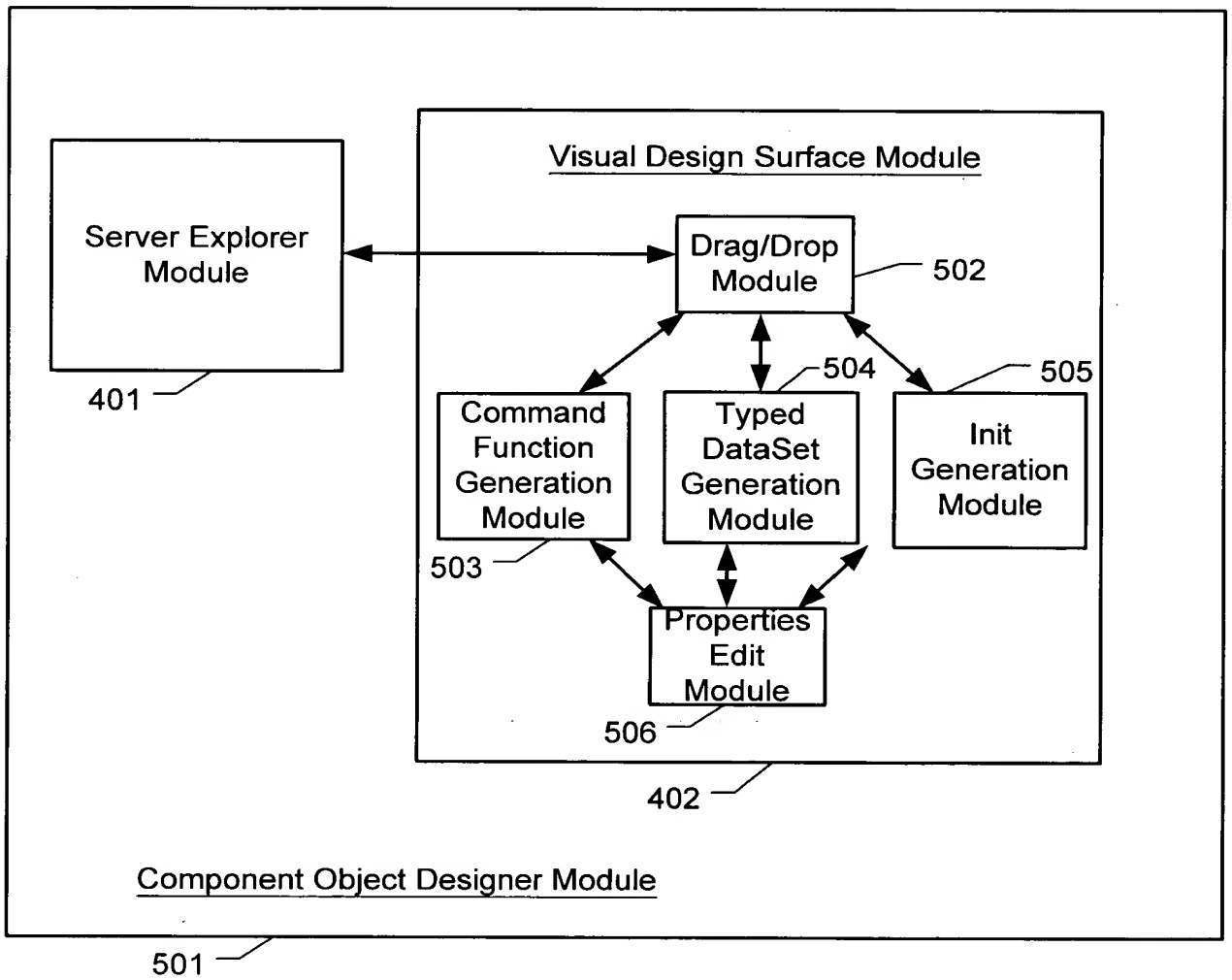

Server Explorer Module
401
Visual Design Surface Module
Drag/Drop Module
502
Command Function Generation Module
503
Typed DataSet Generation Module
504
Init Generation Module
505
Properties Edit Module
506
402
Component Object Designer Module
501

FIG. 6

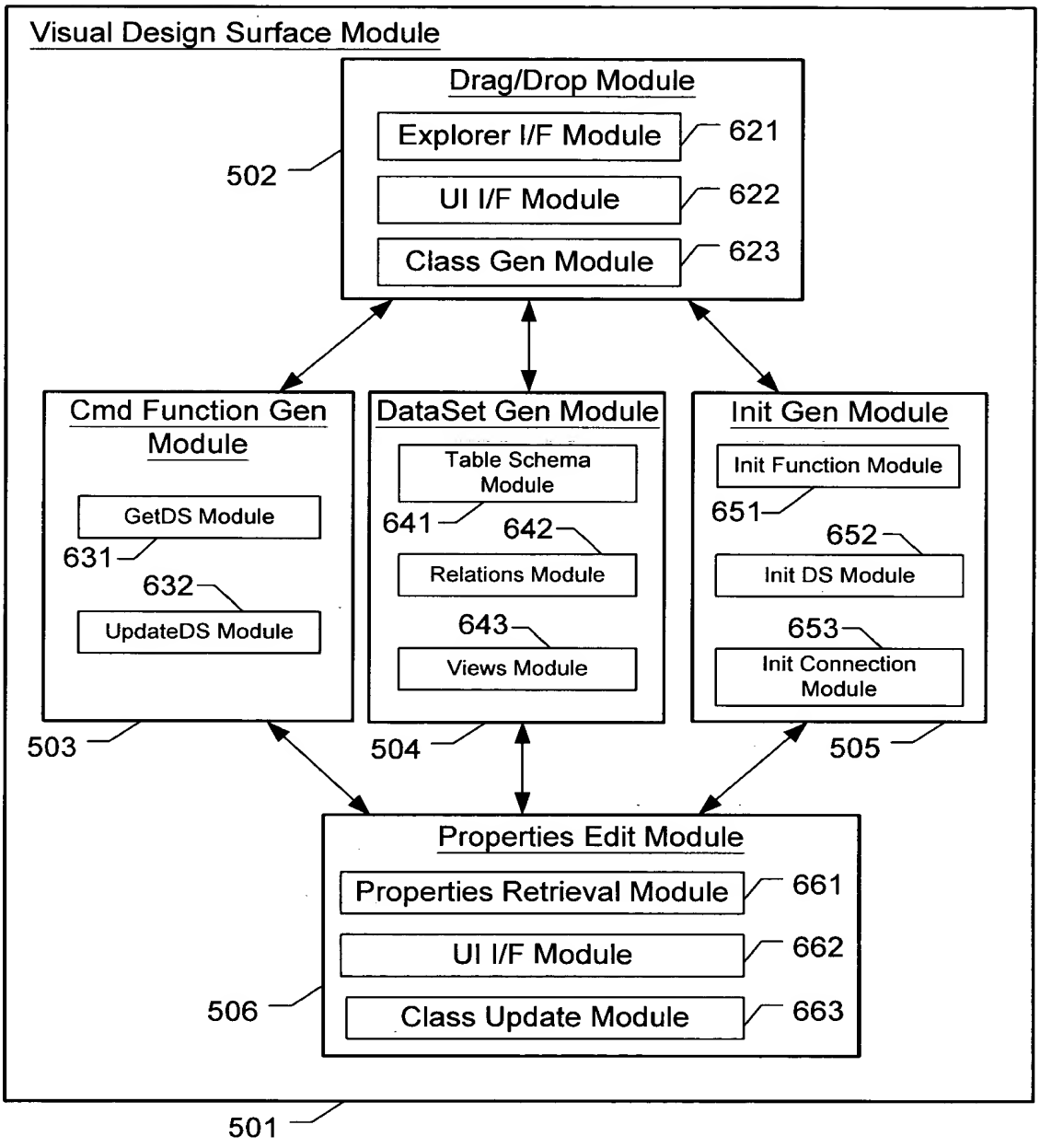

Visual Design Surface Module
Drag/Drop Module
Explorer I/F Module
621
UI I/F Module
622
Class Gen Module
623
502
Cmd Function Gen Module
GetDS Module
631
632
UpdateDS Module
DataSet Gen Module
Table Schema Module
641
642
Relations Module
643
Views Module
Init Gen Module
Init Function Module
651
652
Init DS Module
653
Init Connection Module
503
504
505
Properties Edit Module
Properties Retrieval Module
661
UI I/F Module
662
Class Update Module
663
506
501

FIG. 7a

FillDataSet Method

```
Public Function XXXXFillDataSet(ByVal dataSet As DataSet {,ByVal
{ParameterName}  As System.{ParameterType}}) As Long

' Copy input Parameter Values to the Parameter Collection
        DIM vtParameter As Varient
        vtParameter1 = {ParameterName}
        Set
{Adapterinstance}.SelectCommand.Parameters.Item(ParameterName.Value=vtParamet
er1
'Create an error handling block in case filldataset throws an exception
        Try
'Load dataSet from the command
        XXXXXFillDataSet = {AdapterInstance}.FillDataSet(dataset)        701
        Catch eFillExecption as Exception
                'if we can do a debug.print without a reference, then we should print the
                'error info to the output window and re-throw the error.
        End

End Function
```

FIG. 7b **UpdateDataSet Method**

```
Public Function XXXXUodateDataSet (ByVal updateDataSet As DataSet) As Long

        const DataCursorRowState flag = DataCursorRowState.new |
DataCursorRowState.Deleted | DataCursorRowState.ModifiedCurrent;
        DataRow[] datarows = dataTable.Select(" ", " ", flag);

        Dim UpdateRows as DataRows()
        Dim NewRows as DataRows()
        Dim DeletedRows as DataRows()                                    702

' Get All of the Deleted Rows and Update the Data Store
        DeletedRows = UpdateDataSet.Select(" ", " ", DataCursorRowState.Deleted)
        If 0 < dataRowLength then
                Update(DeletedRows, AdapterInstance.DefaultSourceTableName);
        End If

' Get All of the Updates Rows and Update the Data Store
        UpdatedRows = UpdateDataSet.Select(" ", " ",
DataCursorRowState.ModifiedCurrent)
        If 0 < dataRowLength then
                Update(DeletedRows, AdapterInstance.DefaultSourceTableName);
        End If

' Get All of the New Rows and Update the Data Store
        NewRows = UpdateDataSet.Select(" ", " ", DataCursorRowState.New)
        If 0 < dataRowLength then
                Update(DeletedRows, AdapterInstance.DefaultSourceTableName);
        End If

End Function
```

FIG. 8a

FillAllDataSet

```
Public Sub FillAllDataSet(ByVal dataset As DataSet(, ByVal Parameters As
System.{ParameterType})

    ' The line below is added for each adapter on the Virtual Design Surface
    ' Passing into the function only the necessary parameters
    (AdapterName1)FillDataSet dataset{, _parameters}
    (AdapterName2)FillDataSet dataset{, _parameters}
    *
    *
    *
    (AdapterNameN)FillDataSet dataset{, _parameters}

End Sub
```

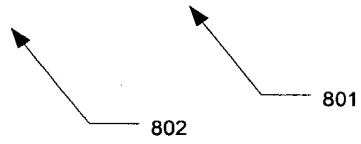


FIG. 8b

UpdateAllDataSet

```
Public Sub Update{DataSetName} (ByVal dataset As DataSet)

    ' The line below is added for each adapter on the Virtual Design Surface

    (AdapterName1)Update dataSet
    (AdapterName2)Update dataSet
    *
    *
    *
    (AdapterNameN)Update dataSet

End Sub
```

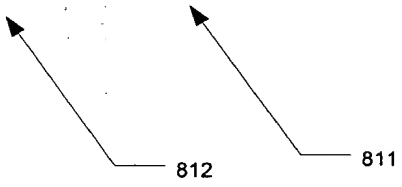
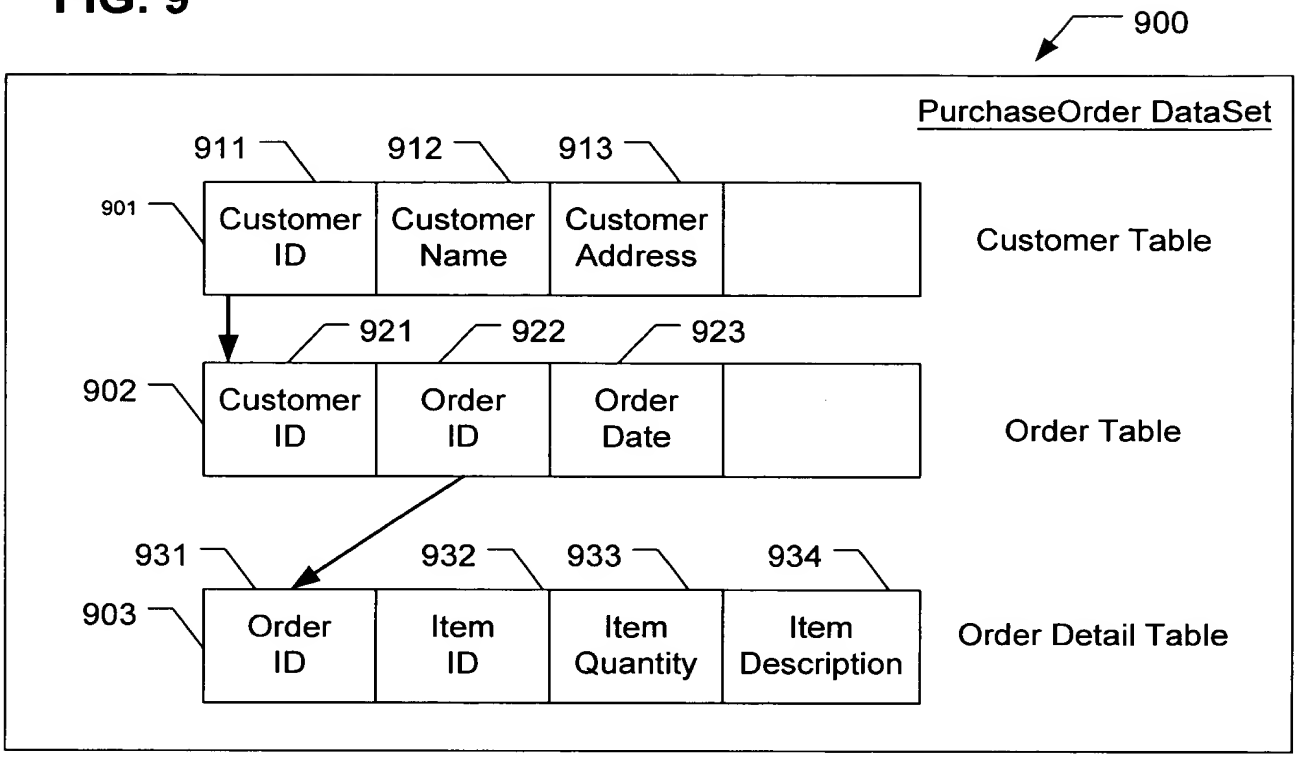


FIG. 9



940

```
Public Sub FillAllDataSet(ByVal PurchaseOrder As DataSet(, ByVal Parameters As
        System.{ParameterType})

        CustomerFillDataSet PurchaseOrder(, _parameters}
        OrderFillDataSet PurchaseOrder(, _parameters}
        OrderDetailFillDataSet PurchaseOrder(, _parameters}

End Sub

Public Sub UpdateAll (ByVal PurchaseOrder As DataSet)

        ' The line below is added for each adapter on the Virtual Design Surface

        OrderDetailUpdate (PurchaseOrder, Filtered (Delete))
        OrderUpdate (PurchaseOrder, Filtered (Delete))
        CustomerUpdate (PurchaseOrder, Filtered (Delete))

        ' The line below is added for each adapter on the Virtual Design Surface

        OrderDetailUpdate (PurchaseOrder, Filtered (Insert | Update))
        OrderUpdate (PurchaseOrder, Filtered (Insert | Update))
        CustomerUpdate (PurchaseOrder, Filtered (Insert | Update))

End Sub
```

941

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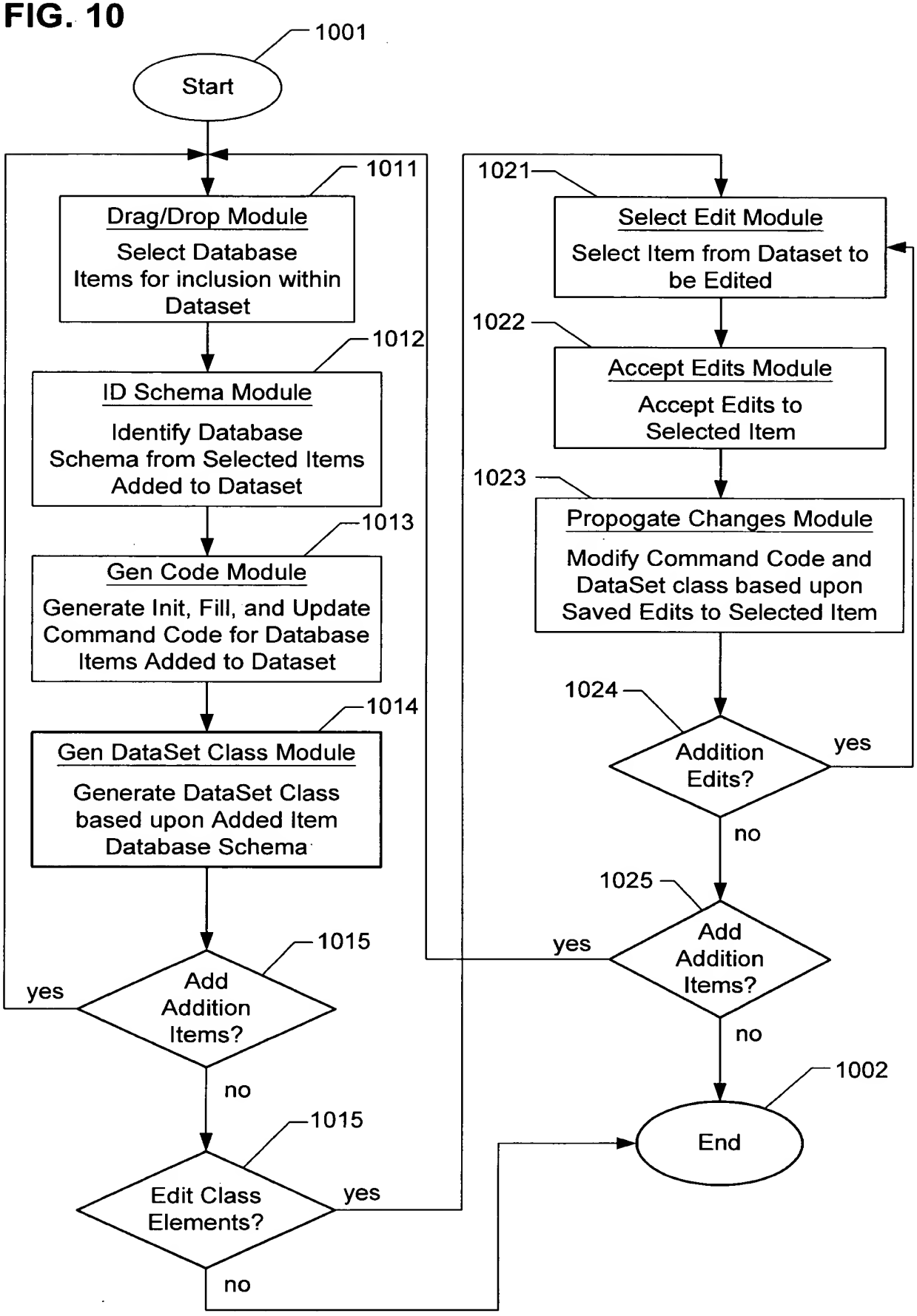
943

944

FIG. 10


1001
Start
1011
Drag/Drop Module
Select Database Items for inclusion within Dataset
1012
ID Schema Module
Identify Database Schema from Selected Items Added to Dataset
1013
Gen Code Module
Generate Init, Fill, and Update Command Code for Database Items Added to Dataset
1014
Gen DataSet Class Module
Generate DataSet Class based upon Added Item Database Schema
1015
Add Addition Items?
yes
no
1015
Edit Class Elements?
yes
no
1021
Select Edit Module
Select Item from Dataset to be Edited
1022
Accept Edits Module
Accept Edits to Selected Item
1023
Propogate Changes Module
Modify Command Code and DataSet class based upon Saved Edits to Selected Item
1024
Addition Edits?
yes
no
1025
Add Addition Items?
yes
no
1002
End